

WHAT IS CLAIMED IS:

1. A resistance welding method for joining a first metallic member comprising iron or an alloy containing iron and a second metallic member comprising copper or an alloy containing copper with each other by resistance welding, comprising the steps of:

forming a nickel film on at least one surface of the first and second metallic members;

allowing the first metallic member to butt against the second metallic member via the nickel film; and

allowing a part each of the first and second metallic members, and at least a part of the nickel film, to melt by flowing electric currents through the first and second metallic members to generate a heat based on contact resistance between the first and second metallic members, thereby joining the first metallic member to the second metallic member.

2. A resistance welding method according to Claim 1, wherein the nickel film is formed by plating.

3. A resistance welding method according to Claim 1 or 2, wherein the nickel film is formed with a thickness of 0.5 to 5.0  $\mu\text{m}$ .

4. A resistance welding method according to any one of Claims 1 or 3, wherein the nickel film is formed on the surface of the first metallic member, further comprising a step of forming a tin or silver film on the nickel film.

5. A structure of a resistance welding part obtained by the resistance welding method according to any one of Claims 1 to 4, wherein

a first alloy layer containing nickel, copper and iron is formed at the side of the first metallic member, and a second alloy layer containing nickel and copper is formed at the side of the second metallic member along the interfaces on the first metallic member and on the second metallic member, respectively.

6. A structure of a resistance welding part according to Claim 5, wherein the first and second alloy layers have a combined thickness of 5 to 10  $\mu\text{m}$ .

7. A method for manufacturing an electronic component comprising the steps of:

preparing a terminal member comprising iron or an alloy containing iron, and a connection conductor comprising copper or an alloy containing copper; and

joining the terminal member to the connection conductor by resistance welding,

further comprising a step of forming a nickel film on a surface of at least one of the terminal member and the connection conductor,

wherein the step for joining the terminal member to the connecting conductor by resistance welding comprises the steps of: allowing the terminal member to butt against the connection conductor via the nickel film; and allowing a part each of the terminal member and the connection conductor, and at least a part of the nickel film to melt by flowing electric currents through the terminal member and the connection conductor to generate a heat based on contact resistance between the terminal member and the connection conductor, thereby joining the terminal member to the connection conductor.

8. A method for manufacturing an electronic component comprising the steps of:

preparing two cap-shaped terminals comprising iron or an alloy containing iron, a central conductor comprising copper or an alloy containing copper, and an element having a through hole for receiving the central conductor;

forming a nickel film at least on the inner face of each cap-shaped terminal;

disposing the element on the central conductor while the central conductor is received in the through hole;

putting each cap-shaped terminal on each end of the element so that the inner face of each cap-shaped terminal is allowed to butt against each end face of the central conductor via the nickel film; and

allowing a part each of the cap-shaped terminal and central conductor, and at least a part of the nickel film to melt by flowing electric currents through the cap-shaped terminal and the central conductor to generate a heat based on contact resistance between the cap-shaped terminal and the central conductor, thereby joining the cap-shaped terminal to the central conductor one another.

9. An electronic component provided with a terminal member comprising iron or an alloy containing iron, and a connection conductor comprising copper or an alloy containing copper, said terminal member being joined to said connection conductor by resistance welding, wherein

a first alloy layer containing nickel, copper and iron is formed at the side of the terminal member, and a second alloy layer containing nickel and copper is formed at the side of the connection conductor along the interfaces on the terminal member and on the connection conductor, respectively.

10. An electronic component according to Claim 9, wherein the terminal member is provided with the cap-shaped terminals to be put on both ends of the electronic component, and the connection member is provided with a central conductor to be disposed on the center line of the electronic component, the inner face of the cap-shaped terminal being joined to each end face of the central conductor by resistance welding in the area where the former butts against the latter, and the electronic component further comprising an element having a through hole for receiving the central conductor and being disposed on the central conductor while it is received in the through hole.